CLEANUP

NASNI SITE 9 INFILTRATION

LEAD ACTIVITY
Naval Air Station North Island (NAS North Island)

STATUS
Active

MISSION
To mitigate the volume of treated process groundwater generated from the steam-enhanced soil vapor extraction (SVE) and free product recovery system at Installation Restoration (IR) Site 9, NAS North Island. This process will alleviate the amount of processed groundwater discharged to the publicly owned treatment works (POTW) and will also relieve stress on the current base infrastructure.

Specifically, mitigating the volume of process groundwater that is currently discharged to the POTW will enhance the current system in the following three areas:

- Economics: reduce the fees associated with full-scale discharge and the costs associated with the potential upgrades to infrastructure for full-scale operations.
- Environmental Impacts: reduce the possibility of Notice of Violations (NOVs) due to a potential system upset.
- Public Awareness: reduce the community and public grievances for discharging process groundwater to the bay and reduce the load on the POTW.

In addition, data collected during optimization will be used to assist in preparation of the Feasibility Study (FS).

REQUIREMENT
The EPA Office of Solid Waste and Emergency Response dated 12/17/2000 serves as the regulatory framework for onsite infiltration. The memo states:

> *"Reinjection of treated groundwater to promote in-situ treatment is allowed under section 3020(b) (of the Resource Conservation and Recovery Act) as long as certain conditions are met. Specifically, the groundwater must be treated prior to reinjection; the treatment must be intended to substantially reduce hazardous constituents in the groundwater – either before or after reinjection; the cleanup must be protective of human health and the environment; and the injection must be part of a response action under CERCLA section 104 and 106 or a RCRA corrective action intended to clean up the contamination."*

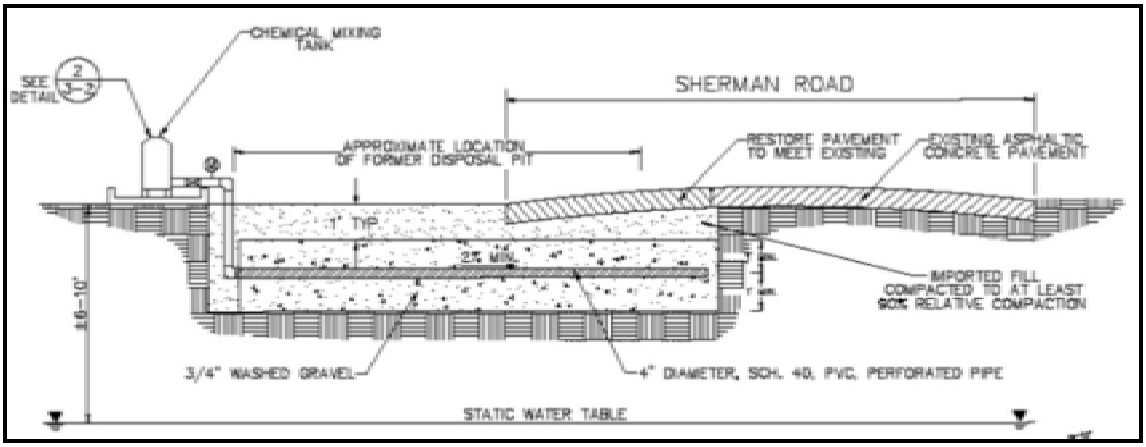
The primary discharge will still remain to the POTW with infiltration pilot program mitigating the volume of discharge to POTW while data is collected to evaluate the potential use as a full-scale alternative.

The Regional Water Quality Control Board (RWQCB) expressed concern that the treated groundwater would dissolve or mobilize existing metals in the soil and subsequently increase contamination in the near surface groundwater. Leachate tests will be performed prior to construction to assist in evaluating this option.

DESCRIPTION

The current operation of the steam-enhanced soil vapor extraction (SVE) and free product recovery system at Installation Restoration (IR) Site 9, NAS North Island has led to over 14,600 pounds of liquid waste during a nine month period from September 1999 to May 2000. In order to alleviate the amount of processed groundwater discharged to the publicly owned treatment works (POTW), infiltration is being investigated as a possible alternative.

Infiltration (or reinjection) is a process by which the treated groundwater is reintroduced into the ground. The infiltration gallery will consist of a series of horizontal wells installed to groundwater depth and spread out over an area approximately 2,500 square feet.



Infiltration Horizontal Well

The infiltration gallery will consist of up to five horizontal infiltration wells connected to a central manifold. This will allow for the infiltration of treated process water to the shallow aquifer. Each horizontal well will be constructed to approximately 1 foot above the groundwater table (8 feet below ground surface) to prevent possible leaching of metals from the soil into the groundwater. The conveyance lines will consist of a 3-inch diameter, perforated, schedule 40 PVC pipe underlain by a minimum of 1 foot of pea gravel and then backfilled to completion with pea gravel and/or native soil. The horizontal wells will be installed over an area of approximately 2,500 square feet to minimize the influence and prevent mounding to the current groundwater hydrology.

Three 20-foot deep, 2-inch diameter groundwater monitoring wells will be installed down gradient of the infiltration gallery for collection of groundwater samples and monitoring of groundwater elevations.

The rate to which the treated groundwater will be reintroduced into the subsurface will match the rate at which natural material will accept. Similar projects (Jacobs FS) indicate 38 gpm as a common rate. The pilot study would determine optimal flow rate, however the initial rate proposed would approximate the same range (between 20 and 40 gpm). The optimal flow rate for project start up would total approximately 60 gpm, with a maximum rate of 150 gpm in the future. The remainder of the treated groundwater would be diverted to POTW or the High Evapotranspiration Irrigation system.

The pilot study would also determine mounding, monitor flow paths, and collect data for a full-scale model.

Infiltration galleries are currently in operation at the following sites:

- Orange County Water District - Water Factory 21
- Los Angeles County - Montebello Forebay Groundwater Recharge Project
- Tracy, California - Defense Distribution Region West

BENEFITS

Many benefits exist for using infiltration as a mechanism for reducing the amount of processed groundwater:

- Low cost construction
- Cost savings over POTW fees or infrastructure upgrades
- Easily implemented on pilot scale
- No permits required
- Treated water disposed on site with reduced risk of potential upset to sensitive receptors - NOV possibility is eliminated
- High community and public acceptance
- Controllable flow
- Zero to little influence
- Could be used as hydraulic barrier

ACCOMPLISHMENTS/CURRENT STATUS

Date	**Activity**
Late August 2001	Prepared letter detailing conceptual plan for construction and implementation
Late Aug/Early Sept 2001	Regulatory concurrence on conducting pilot-scale systems
October 2001	Started construction
November 2001	Completed construction and start discharge of treated water

FUTURE PLAN OF ACTION & MILESTONES

Date	Activity
Ongoing	Monitor success of infiltration project

BIBLIOGRAPHY

- Thermal Enhanced Soil Vapor Extraction and LNAPL Removal Presentation for the 5th International Symposium & Exhibition on Environmental Contamination in Central & Eastern Europe (September 12-14, 2000)
- Non-Time Critical Removal Action Installation Restoration Site 9 Presentation for the Naval Air Station, North Island NAS North Island Coronado Quarterly Team Meeting (July 18, 2001)
- Draft Wastewater Discharge Letter (October 22, 2001)

POINTS OF CONTACT

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